

WHAT IS CLAIMED IS:

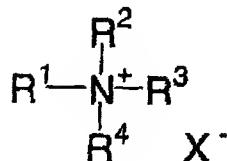
1. A positive planographic printing plate precursor, comprising a support having disposed thereon a positive recording layer containing (A) a water-insoluble and alkali-soluble resin, (B) an infrared absorbent and (C) an organic quaternary ammonium salt, wherein solubility of the recording layer in an aqueous alkali solution is increased by exposure to an infrared laser.

2. The positive planographic printing plate precursor according to claim 1, wherein the (C) organic quaternary ammonium salt has in a molecule thereof at least one of an aryl group and a carbonyl group.

3. The positive planographic printing plate precursor according to claim 1, wherein the (C) organic quaternary ammonium salt has in a molecule thereof both an aryl group and a carbonyl group.

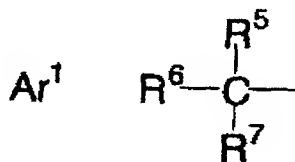
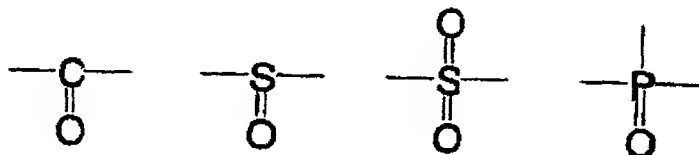
4. The positive planographic printing plate precursor according to claim 1, wherein the (C) organic quaternary ammonium salt is represented by the following general formula (I):

General formula (I)



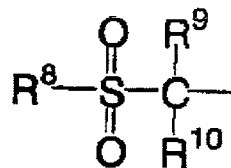
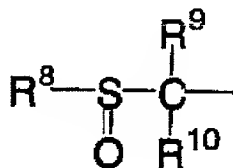
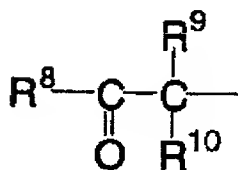
wherein  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are each independently an organic group having one or more carbon atoms, and they may be bonded with each other to form a ring.

5. The positive planographic printing plate precursor according to claim 4, wherein at least one of  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  is selected from the group consisting of the following structures:



wherein  $\text{Ar}^1$  represents an aryl group,  $\text{R}^5$ ,  $\text{R}^6$  and  $\text{R}^7$  represent independently a hydrogen atom or an organic group having one or more carbon atoms, at least two of which are selected from an organic group which is not a hydrogen atom, and  $\text{R}^5$ ,  $\text{R}^6$  and  $\text{R}^7$  may be bonded with each other to form a ring.

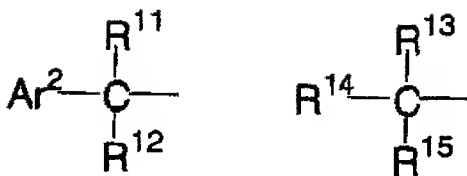
6. The positive planographic printing plate precursor according to claim 4, wherein at least one of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  is selected from the group consisting of the following structures:



wherein  $\text{R}^8$ ,  $\text{R}^9$  and  $\text{R}^{10}$  represent independently a hydrogen atom or an organic group having one or more carbon atoms, at least two of which are selected from an organic group which is not a hydrogen atom, and  $\text{R}^8$ ,  $\text{R}^9$  and  $\text{R}^{10}$  may be bonded with each other to form a ring.

7. The positive planographic printing plate precursor according to claim 6, wherein  $\text{R}^8$  is an aryl group.

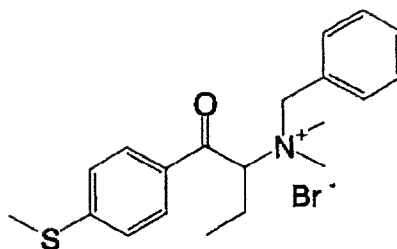
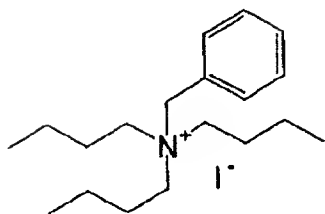
8. The positive planographic printing plate precursor according to claim 4, wherein at least one of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  is selected from the group consisting of the following structures:



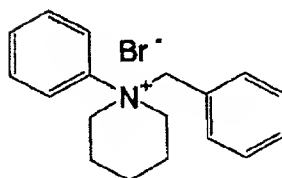
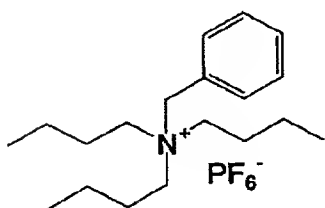
wherein  $\text{Ar}^2$  represents an aryl group,  $\text{R}^{11}$  and  $\text{R}^{12}$  represent independently a hydrogen atom or an organic group having one or more carbon atoms,  $\text{Ar}^2$ ,  $\text{R}^{11}$  and  $\text{R}^{12}$  may be bonded with each other to form a ring, and  $\text{R}^{13}$ ,  $\text{R}^{14}$  and  $\text{R}^{15}$  represent independently a hydrogen atom or an organic group having one or more carbon atoms, at least one of  $\text{R}^{13}$ ,  $\text{R}^{14}$  and  $\text{R}^{15}$  is a non-aromatic cyclic substituent, or any adjacent two of  $\text{R}^{13}$ ,  $\text{R}^{14}$  and  $\text{R}^{15}$  may be bonded with each other to form a ring.

9. The positive planographic printing plate precursor according to claim 4, wherein the (C) organic quaternary ammonium salt represented by the general formula (I) is at least one selected from the group consisting of the following ammonium salts.

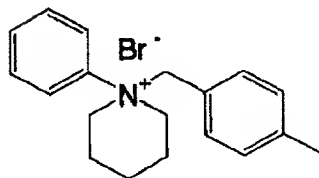
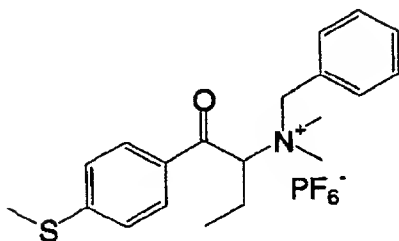
Ammonium salt (2)



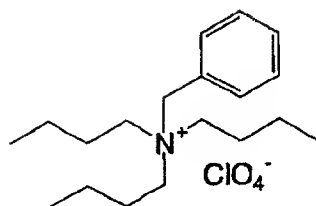
Ammonium salt (4)



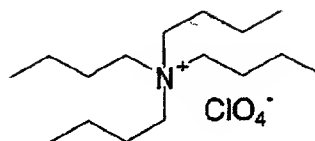
Ammonium salt (6)



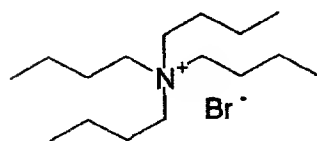
Ammonium salt (7)



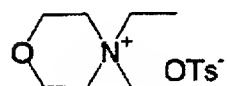
Ammonium salt (8)



Ammonium salt (9)



Ammonium salt (10)



10. The positive planographic printing plate precursor according to claim 1, wherein the (C) organic quaternary ammonium salt is contained at 0.1 to 40% by weight of the total solid component of the positive recording layer.

11. A positive planographic printing plate precursor, comprising a support having disposed thereon at least two positive recording layers containing a water-insoluble and an alkali-soluble resin and an infrared-absorbing dye, with solubility of the recording layer in an aqueous alkali solution being increased by exposure to an infrared laser, wherein a coating amount of an upper positive recording layer is in the range of 0.05 to 0.45 g/m<sup>2</sup>.

12. The positive planographic printing plate precursor according to claim 11, wherein the positive recording layer having a coating amount of 0.05 to 0.45 g/m<sup>2</sup> is located at a position nearest to a surface among a plurality of positive recording layers.

13. The positive planographic printing plate precursor according to claim 11, wherein a water-insoluble and alkali-soluble resin used in a lower recording layer and a water-insoluble and alkali-soluble resin used in an upper recording layer have different solubilities in a coating solvent.

14. The positive planographic printing plate precursor according to claim 11, wherein an infrared-absorbing dye contained in an upper positive recording layer has high infrared transmittance.

15. The positive planographic printing plate precursor according to claim 14, wherein the dye having the high infrared transmittance is at least one selected from the group consisting of an indoaniline dye, a cyanine dye, a merocyanine, an oxonol dye, a porphyrin derivative, an anthraquinone dye, a merostyryl dye, a pyrylium compound, a diphenyl and triphenyl azo compound and a squarylium derivative.

16. The positive planographic printing plate precursor according to claim 11, wherein the water-insoluble and alkali-soluble polymer compound is selected from the group consisting of a homopolymer containing an acidic group on a main chain and/or a side chain, a copolymer thereof and a mixture thereof, and the acidic group which is at least one of a phenol group and a sulfonamide group.

17. The positive planographic printing plate precursor according to claim 11, wherein two or more kinds of water-insoluble and alkali-soluble resins are used in combination as the water-insoluble and an alkali-soluble resin.

18. The positive planographic printing plate precursor according to claim 11, wherein the recording layer further contains at least one selected from the group consisting of an onium salt, an o-quinonediazide compound, an aromatic sulfone compound, an aromatic sulfonic ester compound, an nonion surfactant, an amphoteric surfactant, a printing out agent, an plasticizer and a dye and a pigment as an image coloring agent.

19. The positive planographic printing plate precursor according to claim 11, wherein each of an upper recording layer



and a lower recording layer is prepared by a process selected from: a process comprising the steps of coating the lower recording layer coating solution on the support and coating an upper recording layer coating solution thereon; and a process of overlap-coating two recording layers.

20. The positive planographic printing plate precursor according to claim 11, wherein the support is one of a polyester film and an aluminum plate.